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## MIT engineer's life goal: to be part of a manned mission to Mars

By **John Barry**, Times Staff Writer  
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Joe Palaia, 29, poses in his space suit behind his Holiday home. Palaia's 2019s mission in life is to go to Mars. To further the cause, and his mission, he spent July with five other volunteers living a mock Mars mission on an island just 900 miles from the Earth's North Pole.

[JOHN PENDYGRAFT | TIMES]

### HOLIDAY

What brought a bright young man who sweated through electrical and nuclear engineering classes at MIT to this — a month on a frozen rock in the Arctic, with a fish bowl on his head, a Buzz Lightyear space suit, a shotgun to scare off polar bears and a busted "incinerator toilet"?

That's how bad Joe Palaia wants to get to Mars.

Joe is almost 30. His mission in life is Mars, but his Martian clock is ticking. Bailout-happy, cash-for-clunkering politicians are making it very difficult for the space program. Since graduating from MIT three years ago, Joe has done all he can to keep hope alive.

To advance the cause of manned Mars missions, he left wife and home in Holiday to spend July with five other volunteers in a can-shaped shelter on top of the world just 900 miles from the Earth's North Pole. The place was Canada's Devon Island, which hasn't made much news outside musk oxen circles since a meteor fell on it 20 million years ago.

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Their assignment: Pretend they're on Mars.

Joe and mates wore fake space suits. They endured snow, rain and fog. They slept through hurricane-force winds and blazing sunshine at midnight. They were armed for bear but saw one mosquito and one rabbit.

They did accomplish something astronauts may one day attempt on the Red Planet. They drew water from rock.

• • •

By now in the story, your eyebrow may be up to your hairline. North Pole. Fake space suits. Polar bears vs. polar bunnies. Incinerator toilets. Fourth rock from the sun. The fair question is: "Is Joe nuts or what?"

He seems to be an intelligent, adventurous, focused young man. He just happens to be in a hurry to leave Earth. Draw your own conclusions.

The Mars Society has been sending volunteers on shoestring expeditions to the Arctic since 2000. It's as close to a Mars environment as you can find on Earth. Everything is like Mars except the polar bears, oxygen and Twitter.

Back in 2000, the Mars Society set up a tall fiberglass tube on the rock and furnished it with generators, stove, showers and cubby holes — each just big enough for a bunk and a shelf.

Joe's crew was the 12th to occupy the tube. He answered an open call for volunteers because going to Mars has been all he's thought about. After MIT, he helped start a company called 4Frontiers in New Port Richey, aimed at getting on the ground floor of Mars commercial opportunities. When he married, he told his wife, Melissa, he'd eventually have to leave for three years or so for a round trip.

The Mars Society made him chief engineer of the Devon Island expedition, meaning he had to keep the tube heated and the balky incinerator toilet working.

When they got to the island by bush plane it was snowing sideways.

• • •

The team was three men, three women. Besides engineer Joe, it included a geologist, two NASA workers, a seismologist and a fifth-grade teacher. Each was encouraged to bring a personal research project. The geologist mined and cooked the mineral gypsum, which was all over the island, and also happens to exist in the polar regions of Mars. When heated to 300 degrees, it releases water.

Joe brought aircraft. He'd persuaded a Gainesville company called Priora Robotics to loan him a small robotic plane rigged with surveillance cameras. Joe's project was to show that he could fly the thing while encumbered in a spacesuit. He flew it six times.

For every outdoor mission, the crew was required to wear the space suits. They'd been sewn by a Denver costumemaker. Each was canvas, badly frayed, and had a button-up fly. The uniform included a backpack which was basically a Tupperware container. It contained a fan that blew air into the stifling bubble helmet.

The purpose of the suits was to test astronaut mobility. Besides, the canvas kept Joe warm. They enjoyed only three or four sunny days. When they got there, the temperature was 5. It got up to about 45.

Ask Joe how six people got along for a month in a tube, and he'll tell you that gypsum is hydrated calcium sulfate. He's scientific, not one for idle gossip. Mostly, it seems, he and his mates worked. It took two weeks to make the tube livable. They generally kept at it every day from 9:30 to midnight, working around bad weather.

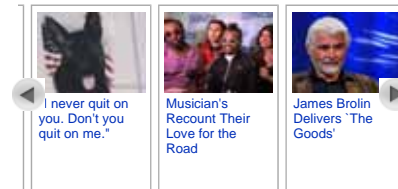
They also had to practice a polar bear drill. It consisted of gathering behind the guy with the shotgun, stripping off space suits, and running as fast as possible. That may or may not be necessary on Mars.



[Photo courtesy of Joe Palaia]

Palaia strikes a pose overlooking the desolate landscape of Devon Island. That's in Nunavut, the largest territory in Canada, and it's as close to a Mars environment as you can find on Earth.

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As soon as Joe's tired crew returned from Devon Island, a study committee appointed by President Barack Obama issued a gloomy report on NASA's manned spaceflight program. Basically, it said, the money isn't there, even to send someone to the moon.

Joe says private enterprise will do it if the government can't. "Look what we're accomplishing with a bunch of volunteers." One way or another, he's going where no man has gone before.

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